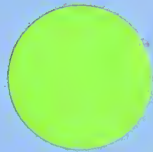


Health Care Financing Grants and Contracts Reports



Continuing Care: The Concept and
the Research Issues

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Health Care Financing Grants and Contracts Reports

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Executive Summary

CONTINUING CARE: The Concept and the Research Issues

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Continuing care is present in the medical care received by children and their families when the elements of care in a clinical episode are connected with one another, and when succeeding clinical episodes, including those for preventive services, are connected with prior ones. The elements of care include the personnel providing the services, the services themselves, and the records of those services and their results. Thus, continuity is present when the patient sees the same provider throughout a clinical episode or in successive episodes or when, although the particular practitioner is different, he or she knows the results of previous encounters through medical records.

Continuing care is presumed to have a number of benefits over episodic or fragmented care. These include greater provider satisfaction, greater patient satisfaction, reduced broken appointments and patient waiting time, improved provider-patient communication, greater compliance with medical instructions, and reduced hospitalization rates, laboratory tests, and x-rays. For each of these benefits empirical evidence is scanty, at best. Also not well documented are the conditions which foster continuing care.

Two principal sets of issues to be addressed through research can be summarized as follows:

1. What factors foster continuing care? In particular, to what extent is continuing care associated with particular payment modes, particular modes of practice, or particular patient characteristics?

2. What are the outcomes of continuing care? In particular, what is its effect upon patient and provider satisfaction, and upon patient compliance with provider recommendations? Also of great interest is what efficiencies, such as minimized service duplication, are attributable to continuing care.

In planning research designed to answer these questions, one should be aware that the various elements of continuity may be fostered by different factors, and may produce different outcomes. For example, provider continuity may lead to greater patient satisfaction than would continuity of medical records; but continuity of medical records may produce greater efficiencies than would provider continuity.

It is necessary to be able to measure continuity before these research questions can be addressed. Since continuity includes several dimensions, multiple measures are possible. One might employ a very simple measure, such as the proportion of all visits which are to the usual provider. Other measures enable one to capture the concentration of care among providers. Also available are measures of continuity which take into account either the available medical resources, or the sequence in which care was obtained. Finally, a measurement strategy which seems most applicable to EPSDT utilizes transition rates which reflect whether a predetermined sequence of events occurs.

Several research strategies are possible. Survey data, claims data, or medical records can provide the needed information. Each strategy carries advantages and drawbacks. The choice of a strategy should depend on the availability of resources and alternatives, and on the nature of the question being addressed.

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CONTINUING CARE:

The Concept and the Research Issues

I. Introduction

Interest in continuity in the delivery of health care services to poor children derives from two principal sources: (1) the rediscovery of primary care, of which continuity is a major component; and (2) the observation that many children served under the EPSDT program receive screening or assessment services without follow-up care.

The Institute of Medicine, after considering 38 statements, defined primary care in terms of five characteristics, one of which was continuity. Most other authors have included continuity, as well. While there does not appear to be disagreement regarding the importance of continuity in primary care, consideration of how to operationalize the concept or measure it has not reached the same state of agreement. In this paper we hope to contribute to that discussion by redefining the term continuing care in a way which makes important research questions apparent. Further, we hope to make a practical contribution in the context of the EPSDT program, whose officials want to be able to measure the extent to which continuity is present (now/or at some future time) and to determine its importance in producing health benefits to children.

First we will attempt to define continuity of care. Next, we will propose ways to measure it. Finally, we will identify the research questions which arise from a concern for continuing care, and propose some elements of a research strategy to answer those questions.

II. Definitions of Continuing Care

A review of the literature reveals a conceptual muddle which conspires to weaken research in the area of continuing care. The situation arises not from any lack of attention to the concept, however. While primary care, comprehensive care, and continuing care are often discussed in the literature, few attempts at meaningful synthesis or refinement of these discussions have been made. In reviewing the literature pertaining to primary care and, in turn, continuing care, the need for clarification becomes apparent. A multitude of concepts and terms are used in this literature, but their definitions, and the distinctions and interrelationships among them need greater specification.

The need for clarification in this area cannot be overstated because the current morass of terms -- continuity, coordination, comprehensiveness -- confuses the design and conduct of research. Only through correction of this blurred conceptual vision will we be able satisfactorily to define and measure independent, dependent, and control variables -- cornerstones of tight research design.

Given the prevailing confusion, this section of our paper will first review a number of definitions of primary care. This focus on primary care will make it clear that the continuing care concept may usefully be thought of as subsumed within primary care. It will be noted, however, that continuing care is intimately related to, if not indistinguishable from, other elements of primary care. Following its placement in a primary care framework, continuing care will be defined more specifically. A number of conceptual definitions will be reviewed in an attempt to isolate the distinctive characteristics of continuing care.

A. Conceptual Definitions of Primary Care

There is no shortage of recent attempts to define primary care, the bases for which vary from personal opinion to consensus among experts. Fortunately, although there is sometimes confusion in the terms used, considerable consensus can be found regarding the elements of primary care.

Before reviewing the defining characteristics of primary care as distinct from secondary and tertiary care, it is useful to review a number of strategies for defining primary care which have proven inadequate. Starfield (1979) notes that primary care cannot be defined by who provides it, nor by the nature of the problems encountered, nor by the proportion of visits made for preventive care, nor by the proportion of patients who are continuing in care rather than referred into care for the first time. Similarly, the Institute of Medicine (1978) writes, "Primary care cannot sufficiently be defined by the location of care, by the provider's disciplinary training, or by the provision of a particular set of services."

If such descriptive characteristics do not help in defining primary care, what does? The Institute of Medicine's review of thirty-eight definitions found that primary care was differentiated from other levels of service by its scope, character, and integration of services. Thus, primary care is distinguished by elements of its structure and process.

Primary care:

1. Is first-contact medicine.
2. Assumes longitudinal responsibility for the patient regardless of the presence or absence of disease.

3. Includes an "integrationist" or coordinating function for the patient.

While others (Byrne, 1972; Fry, 1972; Parker, 1974; Parker, Walsh, Coon, 1976; Pushkin, 1977; Silver and McAtee, 1975; Swanson, 1974; White, 1967), have emphasized one or another aspect, this definition, established by Alpert and Charney (1973), is generally considered to describe major features of primary care. Its stability and reliability was confirmed by Parker, Walsh, and Coon (1976) who surveyed experts in an effort to develop a "consensual definition" of primary care. Their efforts resulted in the following definition:

Primary care provides basic services, including those of an emergency nature, in a holistic fashion. It provides continuing management and coordination of all medical care services with appropriate retention and referral to other levels. It places emphasis when feasible on the preventive end of the preventive-curative spectrum of health care. Its services are provided equitably in a dignified, personalized, and caring manner.

The Alpert and Charney, and Parker, Walsh, and Coon definitions are quite similar in most respects, emphasizing the entry, screening, and referral functions of primary care, including the coordinating or case management aspects of care. It should be noted, however, that the latter definition attempts to capture something qualitative about the attitude of primary care towards the patient -- that is, that it should be holistic (integrating physical, psychological, and social aspects of health), dignified, personalized, caring. These attributes, while difficult to define and measure, are nonetheless desirable features of a comprehensive normative definition.

More recently, the Institute of Medicine offered a reformulation of the concept (1978). Based upon a review of thirty-eight definitions, it found primary care to be "...accessible, comprehensive, coordinated, and continual care provided by accountable providers of health services."

Accessibility refers to the primary care provider's responsibility for assisting the patient in overcoming temporal, spatial, economic, and psychologic barriers to health care. It is especially important given the first-contact aspect of primary care noted by Alpert and Charney (1973).

Comprehensiveness refers to the provider's ability to handle the majority of health problems arising in the population it serves. The inclusion of preventive services in the spectrum of primary care services is particularly noteworthy.

Coordination refers to the provider's role as gatekeeper for patient contacts with other parts of the health care system. This function includes referring the patient to appropriate specialists or facilities, obtaining feedback from them, helping to interpret findings, and arranging for further follow-up when necessary.

Continuity refers to the provider's role in assuring that all aspects of patient care are connected appropriately. It is important to note that continuity cannot exist without accessibility, comprehensiveness, and coordination.

Finally, accountability is maintained by reviewing both the process and outcome of care with both patients and staff. The report notes that accountability is not unique to primary care, but is a crucial attribute of any health care.

The conceptual definitions offered by Alpert and Charney, Parker, Walsh, and Coon, and the Institute of Medicine do not differ appreciably in their content. However, when we compare them, the Institute of Medicine conceptualization emerges as being closest to operational and therefore, more useful to research on primary care or its components.

Primary care is clearly a concept with a number of components. In the next section when we focus on one of these continuity, we will see that the components are also multidimensional and that multiple measures may be necessary in order to capture fully any single component. It should also be clear that components can be present in varying degrees and combinations, thus creating conditions which only partially fulfill the total conceptualization of primary care. In any research on primary care, therefore, we must pay attention to which component or components of primary care are under study.

B. Conceptual Definitions of Continuing Care

A number of definitions of continuity of care have been advanced in the literature. Starfield (1979) writes the following:

Continuity consists of the arrangements by which care is provided as an uninterrupted successing of events. Continuity is achieved by providing one location of care, one practitioner who cares for the patient, and a medical record that reflects the care given to the patient.

Starfield considers continuity to be a structural element of primary care. Her definition, which calls for one location, one practitioner, and a complete medical record, is quite rigorous. Yet, as a normative statement, it is also somewhat arbitrary. Her own research, in fact, is equivocal on whether all three conditions are necessary to achieve continuity and, in turn, coordination (Starfield et al., 1976). One study for example, showed continuity of location to be unrelated to coordination, where coordination

of care was defined as "practitioner awareness of all factors which may reduce or enhance their patients' responses to treatment". In that study, however, continuity of practitioner did improve coordination (Starfield, 1976). In another study, on the other hand, while certain alterations in medical records were found to improve coordination, the effect was greater "when practitioners change from one visit to another". (Starfield et al., 1977, 935). Thus the evidence regarding the components in this definition of continuing care in doubt. Moreover, it is likely that continuity of provider may bring about certain outcomes (such as patient satisfaction), while continuity of records suffices to bring about outcomes (such as minimizing lab test duplication).

Parker (1974) provides a description of "continuing coordinative management" which furthers our understanding of the "continuing care" concept. She writes:

Patient care that goes beyond the simplest "episodic" care situation requires some mechanism for coordination. Continuing responsibility for discovering gaps in the data base, avoiding duplication of prescriptions and procedures, discovering contradictory therapies, making sure that therapeutic regimens are implemented, mobilizing auxiliary and facilitative services as needed, ensuring consideration of pertinent family factors that may influence treatment of outcomes, linking different levels of care -- all are part of continuing coordinative management (Parker, 1974, p. 26).

This description by Parker is helpful because it specifies a number of conditions which we might expect to be present when continuing care is present.

Another frequently cited definition of continuity is offered by Shortell who writes: "Continuity of medical care can be defined as

the extent to which medical care services are received as a coordinated and uninterrupted succession of events consistent with the medical care needs of patients" (Shortell, 1976, p. 378). Shortell indicates that this definition is applicable to either a particular episode of illness, or across episodes over time. Shortell offers a number of indicators of continuity which will be discussed later.

The inextricable relationship between "continuing care" and "primary care" is best explained by the Institute of Medicine. In its report (1978) the Institute wrote: "Continuity is the fourth essential attribute of primary care, and it cannot exist without the first three." The report went on to illustrate the relationships between accessibility and continuity, comprehensiveness and continuity, and coordination and continuity. So confused are these terms and interrelationships in the general literature on primary care, that they are worth further discussion, particularly about the causal ordering.

According to the IOM report, "Inaccessibility of a practitioner encourages patients to use emergency rooms or other providers of services, destroying continuity". But who is the provider? If it is an organization, continuity of location and records may permit the presumed benefits of continuing care to be achieved even if the particular practitioner is different from one event to the next. One question for research, therefore, should be to determine the extent to which and under what conditions the benefits of continuing care are achieved when the location of services is the same.

Similarly, the report hypothesizes a direct relationship between comprehensiveness and continuity. "Referral of patients to others for services that should be within the scope of the primary care unit promotes discontinuous and fragmented care". Finally, in speaking of the relationship between coordination and continuity the authors note that "Failure of the primary care practitioner to seek results from referral sources and to incorporate this information into the patient's record or failure to accommodate and adapt to the patient's preferences also destroy continuity".

A very recent contribution to our conceptualization of continuity is made by Starfield (1980) who suggests that it may be useful to distinguish between longitudinality and continuity. "Longitudinality, Starfield writes, is a phenomenon involving both the availability of a regular source of care (place or professional) and a decision, by the patient, to seek care from that source whenever care is needed". Continuity, on the other hand, is the means by which a succession of medical events are joined. It is a "structural element" of care (place, professional, medical record, or computer), intended to "...improve follow-up of patients' problems and facilitate efficiency in diagnostic workup and management". (Starfield, 1980: 117)

By acknowledging this distinction we are recognizing that the patient does exercise some choice in care seeking. This choice may be to "doctor shop", for example, or to decline to seek follow up or specialist care even when recommended. Research on continuing care must recognize some threshold of "discontinuity" which may be attributable to patient choice.

Drawing on the foregoing discussion, it seems useful to consider continuity to be present in the medical care received by children and their families when the care elements in a clinical episode are connected with one another, and/or when succeeding clinical episodes, including those for preventive services, are connected with prior ones. This conceptualization is similar in most ways to those used by other authors. As noted earlier Shortell, for example, defines continuity of medical care as "...the extent to which medical care services are received as an uninterrupted succession of events consistent with the medical care needs of patients." (Shortell, 1976: 378). Steinwachs puts it similarly: "the link between the patient and his/her personal physician is an important characteristic that can be influential in assuring continuity" (Steinwachs, 1979: 551). Starfield (1979), Holmes, Kane, Ford, and Fowler (1978), and the previously mentioned Institute of Medicine Report (1978) offer definitions with the same components.

The concept of continuity permits students of medical care to identify patterns of health and illness. Thus, the patient's condition is seen not only at a cross-section in time, but comparisons can be made with his own previous state. In addition, it is presumed to contribute to good quality care so that test results guide diagnosis and treatment, whether performed by one practitioner or several and to efficiency by avoiding the need for repetition. Further, when continuity is embodied in the person of a primary care physician who comes to know and understand the patient, his family, and the community, the benefits are assumed to be even greater because the links with previous events are found not only in records, but also in the memory of the provider.

to be even greater because the links with previous events are not only in records, but are known to the provider.

If continuity reflects the connectedness between elements of care and clinical episodes, then it is necessary to identify the specific elements and the means of connecting them. In general, the elements of care consist of the personnel providing the services, the services themselves, and the records of those services and their results.

Thus, one element of continuity is present when the personnel providing the services throughout an episode or in succeeding episodes are the same. For example, if the same physician does the initial history and examination, order the tests, interpret them, prescribe the treatment, and evaluate its effects, the care received by the patient can be said to possess that degree of continuity. Alternatively, if the services are not provided by the same person, but each succeeding practitioner has access to the findings and decisions of the previous caregiver, continuity is present to that extent.

One research issue raised by these two examples is the determination of which arrangement (provider continuity, records continuity, or neither) results in better care. Another issue is whether continuity is present equally in both instances. To put it another way: is it possible for continuity to be absent to some degree even when the same personnel are involved or when records exist which can link one care element to another? We believe the answer is yes if the knowledge generated in a previous step or a prior episode is not used in the care which follows.

Williamson showed, for example, that the results of tests routinely performed on admission to a hospital are frequently overlooked, even when they are abnormal (1967). Starfield and her colleagues have shown that, in some instances, information generated in a series of visits was more likely to be recognized at a scheduled follow up visit when the same practitioner saw the patient on follow up than if the practitioners changed. (Starfield, et al., 1977: 930). A later study by the same team showed, however, that when a new record was introduced to try to improve the extent to which prior information was used in providing services, "the effect of the mini record was much greater when the practitioner changed than when the practitioner stayed the same." (Starfield, et al, 1977: 933) These studies suggest that the extent to which information generated previously is used in clinical care is not always perfect and that, under some circumstances, it may even be better when the practitioner (one element of continuing care) changes than when he stays the same.

These findings lead us to formulate the following hypotheses for testing: the probability of achieving the presumed benefits of continuity are greater when the personnel serving a patient through an entire episode or between episodes are the same, or when records are present which provide information to caregivers about preceding events, including previous episodes, test results, and the results of previous therapies. Those benefits are not assured, however, unless the information -- whether in the head of the provider or in the records -- is actually used.

With this conceptual base, the next question, is, How does one measure continuity? It is apparent from the preceding discussion that a single measure will not be sufficient. The literature provides guidance.

C. Measurement of Continuing Care

A number of students of medical care have addressed the question of how to measure continuity of medical care. Breslau, for example, developed a measure called Usual Provider Continuity (UPC), which is the fraction of all visits which were to the usual provider (Breslau and Haug, 1976; Breslau and Reeb, 1975). This is a simple measure requiring data only on the number of visits made during a period of time (or during an episode of illness) and the different sources of care for those visits. The result is a statistical distribution showing the proportion of patients using a single provider, two providers, three providers, and so on. When plotted on a graph, the data can be used to compare patients living in different locations, paying by different means, or using services in different periods. For example, it can be used to compare Medicaid patients with those (of the same age and sex) paying by other means; or it can be used to compare utilization for the same patients (e.g., Medicaid patients) before and after a policy change.

Shortell (1976) adapted measures developed in other fields which, instead of a distribution, result in a single measure or index of concentration among providers. The indexes (GINI and CON) are higher the more concentrated a patient's visits are among providers. Thus, when all the visits are with a single provider, the concentration is

highest, and the index score is one. When they are distributed equally among several providers, the index approaches zero. The advantage of these measures over UPC is the convenience of a single summarizing number. The disadvantage is the loss of detail.

Bice and Boxerman (1977) devised a measure similar to Shortell's with the difference that visits to a referred physician (i.e. those which are connected by referral to visits with the primary physician) are treated as if they were to the same physician. This measure, which Bice and Boxerman call COC for Continuity of Care, represents an advance over Shortell's to the extent that it includes more connections among the elements of care (see above) than those assumed when only visits to identifiable physicians are counted. It requires referral data, however, which may be more difficult to obtain. The use of COC along with Shortell's GINI and CON would permit comparisons as to efficiency, cost, and effects on health between care with a single physician and care with several linked by referrals.

Steinwachs added information on the context in which care is given in his measure called LICON, the likelihood of continuity. Essentially it is the probability that the number of providers seen is fewer than would have occurred under random conditions given the patient's level of utilization and the number of available and accessible providers. It assumes that the same measure of concentration or of the distribution of visits for two groups must be interpreted differently if they have different access to services. Thus, for example, if only a limited number of physicians in an area will treat Medicaid patients then a value on the measure of continuity may reflect the difficulty in finding accessible physicians. A patient paying out of his own pocket may have

more choices, since low payment rates or other aspects of a state's Medicaid program would not be an issue and therefore, the same low value may reflect his "shopping around".

Steinwachs developed another measure, which he called SECON because it reflects the sequential nature of provider continuity. It is the fraction of sequential visit pairs in which the same provider is seen. It can be adapted for use when an organization is considered to be the provider or when a single physician is the provider. It would not distinguish, however, between the case when two different physicians were linked by referral and that in which there was no connection.

None of these measures of concentration or distribution takes account of differences in types of providers. Thus, if a patient used a hospital emergency department as a regular source of care and saw no other providers, he would score as high on any of these measures of continuity as a patient who received care only from a single physician or in some cases, a single organization of providers.

They all have the advantage of being relatively easy to calculate and, with only a few exceptions, of needing data which are relative accessible. All depend on information about the number of visits, the identification of all providers seen, and a period of time. LICON also requires information about the medical care context, COC includes referrals, and SECON requires information about the sequencing of services. None of the measures includes more elements of care than the visit and the physician, however. Yet, as we saw in our definition of continuity, the medical care process may encompass other elements, as well; and it is possible that continuity is present even when different physicians are caregivers (COC picks up some of this) and that continuity is not present in any

meaningful way even when the same physician is the caregiver from one visit to the next.

These measures are concerned primarily with the presence or absence of some characteristic associated with continuity of care: the extent to which the same physician was used, the extent to which one physician together with referred physicians were used, and the sequential relationship of the physician in one visit with the physician in the next. They can be varied to include organizations as providers or non-physician personnel. None of them gets very far into the process of providing care, however, even though, as we saw from Starfield's work (1977), that is an important issue. She showed that the presence of records does not mean they are used. In fact, the likelihood that they will be used may actually be higher when the physician in the subsequent visit is different from the physician in the first, a finding which calls into question the validity of measuring continuing care solely by the presence of the same practitioner.

Another measurement strategy, which considers continuity of care in terms of whether or not a predetermined sequence of events occurs would overcome some of these weaknesses. Shorr and Nutting have outlined such a strategy, which requires that the steps in the case-finding (assessment and diagnosis) or care-giving process be specified and that data be available to identify the people who receive services at each stage. (See figures 1 and 2). It expresses continuity as the probability that the transition will be made from one step in the sequence to the next. Then, summary measures of the probability of completing the whole process can be calculated. This strategy also permits the identification of those places in the two cycles which present problems (that is, where the

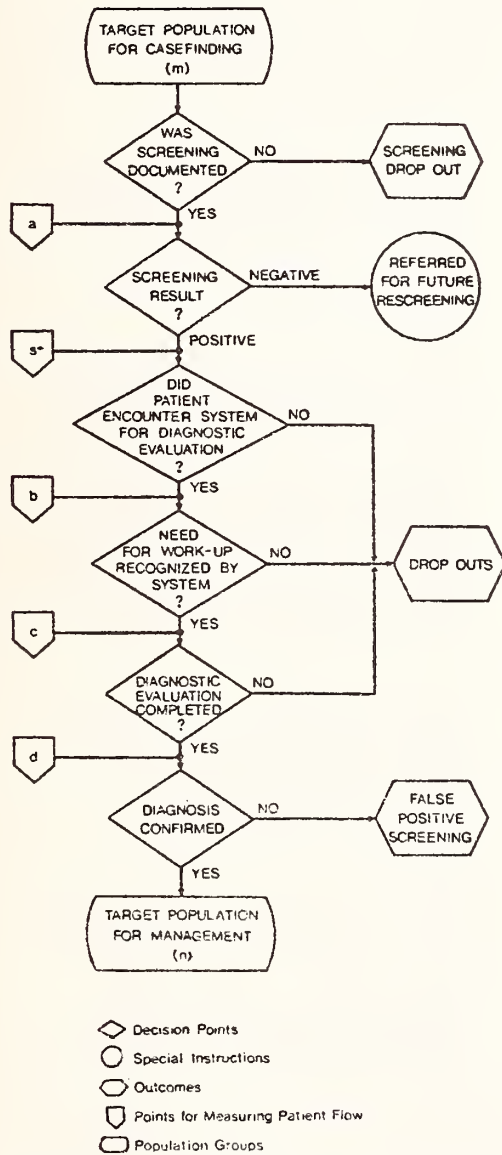


FIG. 1a Clinical sequence used to assess the continuity of case finding.

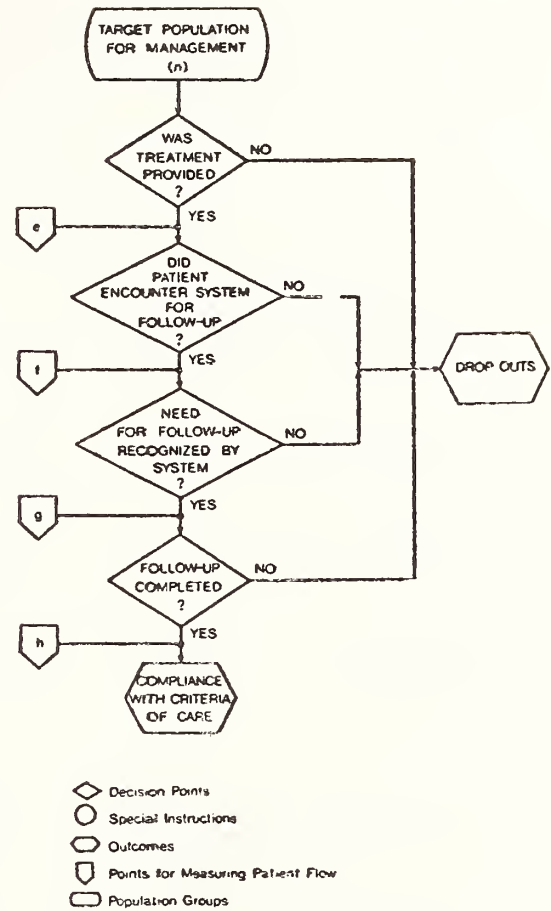


FIG. 1b. Clinical sequence used to assess the continuity of management.

Transitional Rates as Indicators of the Continuity of Care

Transitional Rate	Notation	Computation	
Case finding			
Screening rate	P_{ma}	$\frac{a}{m}$	where a = number of individuals with documented evidence of compliance with screening criteria where m = number of individuals in the screening target population
Screened positive rate	P_{as^+}	$\frac{s^+}{a}$	where s ⁺ = number of individuals screened positive
System contact for diagnosis rate	P_{s^+b}	$\frac{b}{s^+}$	where b = number of individuals who are screened positive (and thus require a primary diagnostic evaluation) who have an encounter with the system
Screened positive recognition rate	P_{bc}	$\frac{c}{b}$	where c = number of cases in which the need for a primary diagnostic workup is recognized by the system
Diagnostic evaluation rate	P_{cd}	$\frac{d}{c}$	where d = number of cases in which there is documented evidence of compliance to criteria of diagnostic information gathering and assessment
Management			
Treatment rate	P_{ne}	$\frac{e}{n}$	where n = number of individuals in target population where e = number of individuals with documented evidence of compliance to treatment criteria
System contact for follow-up rate	P_{ef}	$\frac{f}{e}$	where f = number of individuals who require follow-up that encounter the system.
Required follow-up recognition rate	P_{fg}	$\frac{g}{f}$	where g = number of cases in which the need for follow-up is recognized by the system
Follow-up rate	P_{gh}	$\frac{h}{g}$	where h = number of cases with documented evidence of compliance to follow-up criteria

NOTE: The subscripts a through h refer to the points of measuring patient flow depicted graphically in Figures 1a. & 1b.

Fig. 2. Transitional Rates as Indicators of the Continuity of Care
Shorr and Nutting (1977), 459.

drop out rates are highest) and has the potential for developing strategies to improve the transition rates.

III. Research Issues in Continuing Care

A. Measuring the Impact of Factors on Continuing Care

When continuity of care is the dependent variable in research, the basic question being asked is, "To what extent is continuity present under different conditions?" Put another way, what factors influence or are associated with the presence of continuing care? The researcher is not inquiring into the effects of continuity (e.g. on health status, utilization, or cost), but is interested in determining the conditions which foster continuity. Further, since as we have seen, continuity can be measured in various ways, each of which captures separate aspects of the concept, it is of interest to know which aspects are associated with different conditions.

Continuity and mode of payment. Here the key research question is, are some payment modes (e.g. Medicaid, Medicare, prepaid group practice/HMO, Blue Cross/Blue Shield, commercial insurance, self-pay) more likely to be associated with the presence of continuing care than others? For example, since Medicaid benefits are reasonably comprehensive even in those states which include only the required services, are patients who pay with Medicaid more likely to be receiving continuing care than patients paying by other means? Or, is that tendency counteracted by the fact that, in many states, physician gatekeepers to

medical services have been reducing their activities as Medicaid providers? Alternatively, do HMOs foster continuing care not only because the covered services are comprehensive but also because, in order to receive the benefits, the patient must seek care in the HMO? Or is this theoretical tendency reduced by the fact that the patient's primary physician is not always available when needed and that the continuity, therefore, occurs through the transmission of information in medical records? Do patients who are covered by Blue Cross/Blue Shield or who pay for care directly out of their pockets try to save money by leaving the care cycle before it is completed and, thus, fail to complete the prescribed therapeutic regimen? Or does the fact that the costs of care felt by them more directly lead them to use a single physician who knows them well and who will advise them by phone, thereby saving the expense of office visits?

If it turns out that mode of payment is associated with continuing care, that knowledge would raise the question of what characteristics of the particular payment methods led to the association. For example, was it influenced by the rate of pay, by the processes of payment, by the range of services covered, or by characteristics of the clientele? Moreover, since we are talking about the probability that certain behavior patterns would be present and would, therefore, not expect all people who pay by one means to use continuing care equally, a related question is, within a single payment mode, what factors increase the likelihood of continuity? This question leads to the next topic.

Continuity and modes of practice. Medical care personnel practice in different settings and under different arrangements. Are some more likely to be associated with continuing care than others? For example, are patients who use a solo practitioner with whom they may establish a warm personal relationship more likely to receive continuing care than those who receive care in medical groups or clinics? Is the organized system of coverage common to group practice likely to lead to continuity or is the impersonality possible in such a system enough to reduce a patient's attachment to the practice? Does a multi-specialty group which includes practitioners in the major subspecialties lead more reliably to continuity than a system in which referrals must be made to external practitioners, or is the internal record system an insufficient link between the elements of care? By one measure the patient who uses the hospital emergency department as his regular source of care receives continuous care because the care is provided by personnel in a single organization. To what extent are the other elements of continuity also present, and what are the linkages between them, if any?

Implicit in this discussion is the importance of employing multiple measures of continuity. If a patient uses the same solo practitioner time after time, he is receiving continuing care by virtue of having the same individual provider of services. A patient receiving care in a single-specialty group may be treated by the same physician most of the time, but receive services from others when he is unavailable. By the measure of seeing the same practitioner, the second patient has

less continuity than the first patient; but if information from prior visits is available to and used by succeeding practitioners, then continuity may be present for the second patient as well. (Studies in which continuity is used as an independent variable may shed light on which pattern produces greater satisfaction, lower costs, or better health).

Continuity and patient characteristics. The patient, as one of the actors in the medical care drama, determines much of the extent to which he receives continuity in the medical care he uses. Other conditions may encourage or make possible continuity, but especially with ambulatory care, he decides at each step whether to use services and, if so, where to seek them. If he values continuity, he will make an effort to see the same provider (he has no control over whether information is transmitted and used from one care element to another); if he does not value it, other factors will be more influential in determining the care he uses. Even if he values continuity, however, other conditions may intervene which frustrate his ability to receive it (e.g., mode of payment, accessibility, mode of practice, or the mobility of patient or provider).

It is of interest, therefore, to know the extent to which patient characteristics determine or influence the utilization of continuing care. Race, family structure, income, education, location, length of time in the neighborhood, attitudes toward medical care and toward continuity -- all of these are factors which deserve study. For example, are white, intact, middle-class, suburban families more likely to receive continuing care than families who do not share those characteristics? These factors are relevant to those with an interest

in public policy because, even though not many are susceptible to deliberate manipulation, they may determine the limits of continuity in particular settings and, thereby, influence the goals that one set. That is, if these factors are strongly associated with continuity, they may indicate that certain areas are not good targets for interventions which promote continuity.

Studies in each of these areas in which continuity is the dependent variable should use as many measures of continuity as are feasible. They capture different aspects of continuity and since, at this stage, little is known about the relative value of each (e.g., continuity of provider as opposed to continuity through medical records), it would be a good idea to retain as many options as possible for studies in which continuity is the independent variable. Moreover, if multiple measures of continuity can be used, it will be possible to compare them and to establish standardized relationships among them.

B. Assessing the Impact of Continuing Care

The desirability of continuing care arrangements between providers and clients receives considerable expression in the literature. The presumed benefits of continuing care also underlie much of the proposed CHAP legislation, which strives to improve upon EPSDT by enhancing the links between screening, diagnosis, and treatment. It is assumed that these linkages will bring about improved health status by assuring the diagnosis and treatment of detected conditions. It is also thought that continuing care will minimize the inefficiencies in service delivery that are assumed to be characteristic of episodic or fragmented care.

The reasoning behind the arguments advocating continuing care certainly makes sense, but the literature reviewed below contains little empirical support for it. Findings regarding the impact of continuity are reported for six outcome areas: 1) satisfaction of provider, 2) satisfaction of patients, 3) service utilization behavior, 4) quality of provider-patient interaction, 5) health status, and 6) health service utilization and costs. In addition to presenting the findings, an effort will be made to characterize the soundness of the research upon which they are based and to identify some of the key issues remaining.

The impact of continuity upon the satisfaction of providers.

A number of empirical studies have been undertaken in order to assess the impact of continuing care upon the satisfaction of service providers (Becker, Drachman, Kirscht, 1974; Becker, Drachman, Kirscht, 1974; Caplan and Sussman, 1966; Sussman, Caplan, Haug, Stern, 1967). The evidence available seems to indicate that physicians and ancillary personnel are indeed more satisfied in settings in which the continuity of providers is preserved.

Although there are only a few studies documenting this outcome, it is one in which we can have the most confidence because one of the studies reported utilized a properly randomized controlled study design. Becker and his colleagues (1974) randomly assigned all families of a Children and Youth Clinic to either an experimental or a control group. The experimental group received care during a one year period from a "panel clinic", while the control group received care from a "conventional multistation clinic". Steps were taken to assure comparability of the two groups in all respects except staff structure: the panel clinic utilized a team approach and continuity of pediatrician. Physician and

ancillary personnel expressed statistically significant greater satisfaction in the panel clinic.

Provider satisfaction with care-giving arrangements are certainly important, and the study by Becker et al. lends support to those who contend that greater satisfaction exists under continuing care arrangements. However, the generalizability of the findings in the C & Y Clinic is uncertain in spite of random assignment of staff and patients because Clinic personnel may be different in important ways than other practitioners. Moreover, the study is further weakened by the inability to separate out the effects of a team approach from the effects of continuity of pediatrician. We cannot tell which aspect of the experimental condition resulted in the reported outcome, greater provider satisfaction.

Clarification of the impact of continuing care upon provider satisfaction could be obtained by research studies which specified the experimental condition more precisely. Research in this area would also benefit by replication in a variety of settings.

The impact of continuity upon the satisfaction of patients.

Evidence assessing the impact of continuity upon patient satisfaction gives a mixed picture. Several studies indicate a positive association between continuity and patient satisfaction (Alpert, Kosa, Haggerty, Robertson, and Heagarty, 1970; Becker, Drachman, Kirscht, 1974; Becker, Drachman, Kirscht, 1974; Breslau, Haug, Burns, McClelland, Reeb, Staples, 1975; Sussman, Caplan, Haug, Stern, 1967). Others seem to qualify this relationship (Lewis, 1971; Schlesinger, 1962).

Greater satisfaction is attributed to patients in continuing care settings as a result of two randomized experiments. The first was the study by Becker et al described in the previous section. In spite of a tight design, the study suffers from a poorly specified experimental condition, and its generalizability is limited. The second is a study conducted by Alpert, et al in which 750 low income families were randomly assigned to an experimental and two control groups. The experimental condition consisted of a "comprehensive care program", in which all acute and preventive services, including night and weekend coverage were provided by a multiprofessional team. When interviewed, mothers in the comprehensive care clinic found their relationships with physicians and nurses significantly more satisfying than did mothers in the control groups. While the generalizability of the results to other groups may be limited, it is of importance for our purposes that the sample represented the EPSDT target population.

Evidence supporting parent satisfaction with continuing care relationships is also reported by Breslau, et al (1975). When a sample of 119 parents were asked to choose whether they preferred always having their child seen by the same doctor or having the child cared for by a group, 73 percent preferred seeing the same doctor. Advantages of continuity expressed by the parents included individualized care, rapport with the child, improved patient confidence, and maximum physician knowledge of the case. It is important to note that the families interviewed were selected from among those who had elected to follow their private physician to a new location and, therefore, might be expected to place disproportionate value upon physician continuity.

Some evidence qualifying the relationship between continuity and patient satisfaction is reported by Schlesinger et. al. (1962) who found that greater patient satisfaction was present among those of a higher socioeconomic class and those with chronic illnesses. The latter finding is particularly interesting, suggesting that health status may be an intervening variable between continuity and various outcomes. This question seems a fruitful issue for future research. Lewis (1971), on the other hand, provides the only evidence which possibly discredits the assumption of a positive relationship between continuity and patient satisfaction. Lewis found that when individuals were asked to rank order eleven aspects of comprehensive care in terms of importance, "Seeing the same physician or group on each visit" always ranked lowest.

The evidence regarding the impact of continuity upon patient satisfaction, while not unequivocal, is generally supportive of a sense that provider continuity matters to patients and their families. Further research in this area would benefit from a more clearly specified independent variable. Questions which need to be addressed include the following:

- What elements of continuity foster parent and/or patient satisfaction? For example, is it necessary to see the same physician repeatedly or does continuity of ancillary staff suffice to foster patient satisfaction?
- Is the relationship between continuity and parent/patient satisfaction influenced by patient age? by acute vs. chronic reasons for visit? by provider specialty or training?

The impact of continuity upon service utilization behavior.

Continuity of patient care has been shown to be associated with a number of aspects of service utilization behavior. For example, in the study discussed earlier, Alpert, et. al. (1970) found that mothers in a comprehensive care clinic expressed greater willingness to use physicians for selected medical problems of children than mothers in two control groups. The mothers also used telephone contact with the comprehensive care clinic to a greater extent than the control groups. Becker, et. al. (1974) found a panel clinic to result in the patient spending more time with the physician than in a traditional clinic. Both of these studies reported reduced patient waiting time in the experimental groups (Alpert, et. al. 1970; Becker, et. al., 1974).

The scheduling and keeping of appointments appear to be influenced by continuity of care. Hurtado, Freeborn, Myers, and Davis (1974), for example, examined unscheduled use of ambulatory care services in a Permanente Clinic's membership. The sample of patients indicated that those who believed they are expected to have a regular physician were less likely than those who did not to be high on unscheduled use. Similarly, Nolan, Schwartz, and Simonian (1967) found that among patients attending a Permanente Medical Group Pediatric Department, those who could not name a child's regular physician were underrepresented in visits to the appointment clinic and overrepresented in the drop-in clinic. Neither of these studies conducted in a prepaid group practice was designed to control for other factors which may affect appointment behavior. Nonetheless, they provide evidence which suggests that multi-site studies examining the impact of continuity upon appointment behavior may be fruitful.

A stronger group of studies have demonstrated that continuity is associated with keeping follow-up appointments (Alpert, 1964; Becker, et. al., 1974; Becker, et. al., 1974; Becker, et. al., 1974; Hansen, et. al., 1953). Alpert (1964) interviewed "keepers" and "did not keeps" and found a higher broken appointment rate in clinics where no attempt was made to provide a personal physician. Similarly, patients were more likely to cancel rather than just not arrive for appointments in settings providing a personal physician. Becker, et. al., (1974), in the experiment described earlier, found that the panel clinic patients were more likely to keep follow up appointments.

In another study by Becker, Drachman, and Kirscht (1974) evidence is provided to support the association between continuity and keeping follow-up appointments. A random sample of 125 cases being treated for otitis media in the Comprehensive Child Care Clinic of a large teaching hospital were interviewed after their initial visit and followed up to determine compliance with prescribed medical regimen and recommended follow up visits. Seeing the same physician was found to be associated with increased probability that the follow up visit was kept.

Unscheduled appointments and broken appointments are a potentially disruptive aspect of health care. They can be costly and can contribute to increased patient waiting time. Broken or cancelled follow-up appointments may also be injurious to patient health if the visits were an important part of the diagnostic or treatment process. For these reasons it seems worthwhile to examine the impact of continuing care upon appointment behavior more closely. The research studies cited are predominantly uncontrolled descriptive studies. Some issues which might be pursued in future research include the following:

What elements of continuity of care are associated with the various aspects of service utilization behavior, especially appointment behavior?

Does continuity (of physician, of allied personnel) foster keeping follow-up appointments? Is the relationship conditional on patient age, reason for visit, accessibility, patient waiting time, length of time between first and follow up visits, or other intervening variables?

The impact of continuity upon provider-patient interaction and compliance with medical regimen. A number of studies have sought to identify the impact of continuity upon qualitative aspects of a provider's interaction with patients. One important question, especially important given the incidence of psychosocial problems among children, is whether continuing care relationships are associated with a greater likelihood that the parent will report a child's behavior problems. Some evidence, although only descriptive, was provided by Breslau and her colleagues (1975). Parents who favored seeing the same physician repeatedly, indicated that this continuity would foster better communication and a better rapport. Additional evidence is provided by Becker, et. al. (1974) who found that parents of children assigned to the "panel" clinic were more likely to report the behavior problems of their children than the parents of children assigned to the "conventional" clinic. They also found that the parents participating in the "panel" clinic expressed a significantly greater level of concern for their childrens' health than the other parents.

Several studies have examined the association between continuity and compliance with medical regimen (Becker, et al, 1974; Charney,

Bynum, Eldredge, Frank, McWhinney, McNabb, Scheuner, Sumpter, Iker, 1967; Curry, 1968; Fink, 1969; Gordis and Markowitz, 1971). Becker, et. al. (1974), in a descriptive study described earlier, found strong nonexperimental evidence of this association. Previous treatment of the child by the same physician was associated with increased likelihood that medicine would be given, and that the mother would know how many times a day to give the prescribed medication. Moreover, a child's generally seeing the same physician at a clinic correlated with every measure of compliance used in the study. Charney, et. al. (1967), in a survey of 459 children in three private pediatric group practices, compared "takers" of a full course of penicillin with "nontakers." The only variables distinguishing significantly between the two groups were the mother's estimation of the severity of illness, and whether or not it was the child's usual doctor prescribed the medication.

A third study, utilizing an experimental design, also supports the existence of an association between continuity and compliance. Fink, et. al. (1969) randomly assigned 98 children with upper respiratory infections to three study groups and one control group. The control group saw a "regular" physician and "regular" nurse. The first experimental group saw a "regular" physician and a "special" nurse, the second experimental group saw a "special" physician and a "regular" nurse, and the third group saw both a "special" physician and nurse. The "special" providers gave patients additional attention, having been trained as management specialists. The three study groups all received higher scores on the various compliance measures.

However, the difference between the experimental groups and the control groups was not as clear as would be desirable for inferring what aspect of the experimental condition might have made this difference.

Gordis and Markowitz (1971), in an often-cited report, conducted a study which found that no apparent differences in compliance as a result of continuous care relationships. A sample of black youths with a history of rheumatic fever were stratified by sex, age, and baseline compliance performance, and randomly allocated to two groups: a continuous care group receiving accessible, comprehensive pediatric care from two physicians, and a specialty clinic group where patients received care only for rheumatic fever. The latter setting had limited accessibility, and was not responsive to providing preventive or non-rheumatic fever related services. Compliance with an oral penicillin regimen was measured through urine tests. After fifteen months, no measureable differences in compliance had appeared.

The impact of continuity upon health status. One area in which there appears to be a notable lack of research is the relationship between continuity and health status. To date, we have not identified any direct empirical evidence to support the contention that continuing care relationships foster improved health status. This lack of evidence is not altogether surprising; utilizing health status as a dependent variable poses many measurement problems. We might expect the impact of continuity upon health status to occur at

the margin and to be more subtle than currently available measures are capable of detecting. Moreover, we have seen that much of the research on continuity have had other design weaknesses. Usually the sample sizes are small and select, and the intervention (if any) is of brief duration. Detection of changes in health status is facilitated by a controlled experimental design, preferably extending over a period of years. One study, conducted by Gordis (1973), provides some modest evidence that a Comprehensive Care Program was able to reduce the incidence of hospitalizations for first attacks of rheumatic fever. These conclusions were drawn from hospital records both before and after the program was established, and in eligible census tracts and noneligible census tracts. The study represents a creative attempt to attribute health status gains to a target population on the basis of a quasi-experimental research design. Unfortunately, few other studies of this type can be found in the literature.

Another study, conducted by Gordis and Markowitz (1971), utilized a randomized experiment in order to assess the impact of comprehensive and continuous pediatric care. Pregnant adolescents were randomly assigned to two groups. One received "comprehensive care" of their first born infants in a hospital-based clinic staffed by a pediatrician, public health nurse, and social worker. The second group received "regular care" of their first born infants elsewhere in the community, including clinics, private offices, or emergency rooms. The authors found no apparent differences in immunization history or illness incidences between these two groups.

Although the literature appears to be without direct evidence on this point, the research on keeping follow up appointments and on compliance with medical regimens provides a basis for optimism. As we have seen, continuing care relationships appear to foster the patients' properly carrying out medical regimens, whether preventive or therapeutic in nature. Perhaps the most promising strategy for understanding the impact of continuity upon health status is to assume that the efficacy of an intervention depends upon both the intervention's clinical benefit and its proper execution. Continuity of care will not alter a preventive or therapeutic intervention's clinical efficacy, but it may well improve the likelihood of its proper execution, both by the provider and by the patient. Continuity may enhance the physician's decision making by ensuring maximum knowledge of the case. In addition, it may create conditions which foster the patient's adhering to either a preventive or therapeutic regimen.

This discussion suggests that the issue of the impact of continuity upon health status might be addressed in either of two ways. One strategy would be to undertake a large scale experiment, over a period of years, which would enable identification of continuing care's impact upon indicators of health status. How, we might ask, do children obtaining care which possesses different elements or levels of continuity fare regarding incidence of acute or chronic illness?

Another, perhaps more realistic, approach would be to focus primarily upon compliance as an outcome variable while assuming that the recommended regimen, if executed optimally, will lead to the

presumed benefit to health status. In this case the initial question would be how do children obtaining care with different elements or levels of continuity fare in complying with preventive and/or therapeutic regimens such as those outlined in EPSDT or CHAP? The same study might look, in turn, at the impact of these regimens on health status in the long run.

The impact of continuity upon health service utilization patterns and costs. It is commonly expected that continuing care, when contrasted with fragmented or episodic care, results in more efficient patterns of health service utilization. Continuing care, it is said, minimizes duplication of services and the provision of unnecessary services. Moreover, it is expected to discourage the substitution of costly emergency room services for the less costly primary ambulatory care services such as those offered in neighborhood health centers, out-patient clinics, or office-based practices. Finally, in so far as continuing care fosters appropriate use of preventive services, it may reduce the need for acute care.

These presumed benefits of continuity are among those of greatest interest to child health policymakers. While not refuted in the literature, there is very little evidence to date that these benefits can be attributed to continuing care arrangements. A number of articles posit such efficiencies, but provide no empirical evidence in support of this position (Haggerty, 1969; Haggerty, 1970; Vorzimer and Katz, 1970).

A small group of studies provides some evidence pertaining to efficiencies attributable to continuing care arrangements. Alpert et. al. (1970), for example, found that a comprehensive care program, when contrasted with two control groups, reaped the benefits of reduced costs associated with fewer laboratory tests. Another study, conducted by Heagarty, et. al. (1970), provides the most thorough examination of these issues. In this study 750 emergency clinic families who could name no usual physician were randomly assigned to one experimental and two control groups. The experimental group participated in a comprehensive care program where they received their preventive and therapeutic services from no more than 2-3 physicians over a three year period. The presence of a physician with a primary relationship and responsibility for his patient was the major difference between the experimental and control conditions. The results revealed that the experimental group made fewer visits and received fewer lab tests and x-rays. The average charge for an acute illness visit was less for patients in the experimental group.

There is no doubt that these two studies are inadequate to document efficiencies attributable to continuing care arrangements. Given the interests of policymakers on this issue, further research would seem worthwhile. Of particular interest would be to identify which elements of continuity are associated with various efficiencies. For example, we might hypothesize that continuity of personnel will foster utilization of appropriate settings and discourage, for example, inappropriate emergency room utilization. However, other elements of continuity may bring about efficiencies resulting from minimizing

duplication of services. A medical record documenting prior interventions may be the most crucial element in this regard. Research which untangled these relationships might suggest strategies for achieving greater efficiency in different areas of EPSDT or CHAP.

Several other comments about research in this area are worth noting. First, it seems useful to recognize that efficiencies attributable to continuing care are likely to have many sources. Gains achieved by minimizing service duplication or maximizing the use of low cost settings should not, however, be viewed in isolation. Continuing care arrangements may also prove to be costly to the extent that they increase service utilization in the short run, even if they decrease it in the long run. Any research in this area should go beyond an isolated finding such as fewer lab tests in continuing care arrangements, to an attempt to assess costs and benefits simultaneously. Minimizing unnecessary services or duplication seems useful under any circumstances. So does maximizing the use of less expensive settings. However, that continuing care arrangements contain expenditures ultimately is a much more complex question than whether they promote greater efficiency.

Summary. Despite widespread belief in benefits attributable to continuity of care, empirical research on continuity is scarce. Clear evidence of the superiority of continuing care arrangements is lacking, but then so is evidence that it is not superior. Some outcome areas, such as compliance, are more well documented than others. Others which may be of particular interest to policymakers, such as efficiency, have received little empirical attention to date.

In thinking about and planning for future research in this area it is worthwhile to review some of the weaknesses in the prior research. As noted earlier, certain problems have limited the previous studies' usefulness. Among these are very small sample sizes, a lack of experimental controls, and lack of comparability of comparison groups. In addition, previous research has generally been conducted in clinic settings. Replication of findings in the many other possible settings is vital to our confidence in generalizing from the results. That the research has often been limited to special populations (such as newborns) or special health problems (such as rheumatic fever) also limits its generalizability to the EPSDT target population.

One additional weakness, the failure to define the experimental variable clearly should also be noted. This very serious limitation seems to arise in several ways. First, the researchers have often been confused by the conceptual muddle noted earlier in this paper. The experimental condition is alternately referred to as "comprehensive care", "coordinated care" and "continuing care". Are these really the same? There is a great need for future research to specify the independent variable more clearly, preferably in behavioral terms. In addition, future research must recognize the complexity of these concepts. Their breadth and vagueness limits our ability to know what caused any observed effects. They need to be disaggregated into component parts and manipulated individually if possible if we are to know what intervention has had an impact. We must try to clarify, for example, whether continuity of physician, continuity of allied personnel, continuity of location, or continuity of records is the experimental condition.

C. Research Strategies and Methodological Considerations

The preceding review of research issues pertaining to continuing care revealed a large and exciting area in need of further research. As noted earlier, research on conditions which would foster continuing care seems quite sparse. There is somewhat more research on outcomes resulting from continuing care, and it is suggestive of promising future directions. The strategies chosen to address these research questions must be conditioned by the availability of resources, the availability of alternatives, and the nature of the specific question being addressed. Thus specific strategies for examining these issues in the context of EPSDT or CHAP cannot be described at this time. However, one methodological consideration can be addressed briefly: the data to measure continuity of care.

Several sources of data for measuring continuity may be available. If all of a patient's care is paid for by a single third party, such as Medicaid, claims records may be used. In the case of EPSDT, since the state may maintain additional types of records, such as referrals, a complete data set may consist of claims for services rendered plus evidence of the process of screening, diagnosis, and treatment. Ideally, the data identify diagnoses, all services received, and the sources providing the services. These data would, for most research purposes, be supplemented by control data about the patient and/or family and the availability and accessibility of other medical care resources.

If only diagnosis and source of care are available, the UPC, CON, and GINI measures can be employed. If data can be added on the resources available in the area, LICON can be used; if the sequence of events is known, SECON can be used; and if referrals are known, COC can be used. It would be possible to use the Shorr and Nutting transition approach when an ideal pattern of care can be constructed and when the data are available to determine characteristics of the patient's attempts to complete that pattern. This approach is particularly well-suited to determining the connectedness between the screening, diagnosis, and treatment aspects of the EPSDT program.

Household surveys are another possible source of empirical data. By this method, residents of given areas would be interviewed and asked questions regarding their utilization of services within a specified period of time immediately preceding the interview. They could be questioned about illness episodes, the care received, the sources of the care, its cost, and other questions. These data could be used by themselves or, preferably, be supplemented by data from providers and payors to verify and complete the record of service. Depending on the completeness of the data, all measures of continuity might be used. Such a source of data have been obtained through the National Medical Care Expenditure Survey conducted for the National Center for Health Services Research. With the utilization and expenditure data gathered in that survey, which was supplemented with information from providers and insurers, many of the questions regarding continuity of care might be studied without incurring the additional expense of original data collection.

Provider records are a third possible source of data. An important limitation associated with this source, however, is that it is very difficult to reconstruct all of a patient's care in this way. One would need to contact all available sources of care in order to capture the patient's use of the whole system. While it is probably not a viable strategy in most cases, this type of data may be adequate where patients tend to use a limited range of providers (such as HMO enrollees might) or where few care alternatives are available (such as in a rural area).

To use the UPC, CON, and GINI measures, only diagnosis and source of care are necessary to determine the presence of continuing care. The Shorr and Nutting transition rates require that information and more. Because of its particular appropriateness for studies of EPSDT, some additional discussion of this measure is in order.

To study the continuity of screening, a target population for a specific area, such as a state, would need to be identified. In addition, an outline of the sequence of clinical activities which comprise case findings would need to be developed. The sequence could be developed by medical experts and confirmed or modified by local physicians to take account of local conditions which would affect the possibility of completing the full sequence. Data would then need to be collected on the number of children screened and not screened (which should add to the total target population), and the number of positives in each of these groups. The positives in the unscreened group would be estimated from those found in the screened group, controlling for salient patient characteristics. The number of EPSDT eligi-

bles, their age distribution and other characteristics could be determined from AFDC and other public assistance records. Data on the utilization of services could be taken from EPSDT and Medicaid claims and other records available in the state.

To study continuity of treatment for conditions detected in EPSDT screening, the target population would consist of all children with positive results on the various screening tests. A protocol of the sequence of diagnostic and treatment steps would need to be developed. Data would be needed on the number of children diagnosed with the condition, including those identified through the EPSDT screening program and those identified through other means (such as regular office-based care paid for by Medicaid). Finally, data would be needed on the numbers completing each step (and all steps) of treatment specified in the protocol. The number of positive screens could be determined from EPSDT records for some children, and Medicaid claims for others. Again, the idealized sequence of treatment steps would be developed by experts and confirmed or modified to take local conditions into account. The data on services received would be obtained from Medicaid and EPSDT claims. With these data it would be possible to determine the proportion of children receiving care from the same provider (e.g., UPC, CON, and GINI) as well as the proportion completing each step along the sequence. Using these data on the extent of continuity, it would also be possible to determine the effects of continuity on utilization rates and expenditures. In order to address patient satisfaction, compliance, or the effect on health status, however, it would be necessary to acquire supplemental data for samples of patients.

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